Sunoco, Inc.
10 Industrial Highway MS4
Lester, PA 19029

August 19, 2013

Mr. Steve O'Neil
Chief, Operations Section
Pennsylvania Department of Environmental Protection
2 East Main Street
Norristown, PA 19401

Re: Groundwater Remediation Status Report
Sunoco Marcus Hook Industrial Complex, First Half 2013

Dear Mr. O'Neil:

The Sunoco, Inc. (R&M) ("Sunoco") Marcus Hook Industrial Complex was officially entered into the Pennsylvania One Cleanup Program in November 2011. This First Half 2013 Remediation Status Report for the facility was prepared to summarize work completed in support of the Work Plan for Site Wide Approach under the One Cleanup Program submitted to the Pennsylvania Department of Environmental Protection (PADEP) and the United States Environmental Protection Agency (USEPA) on December 19, 2011.

Unless otherwise noted, this report covers Operation and Maintenance (O&M) work completed between January 1 and June 30, 2013. Remediation technician services, project management, and project reporting are contracted to Stantec Consulting Services Inc. (Stantec). Status reports are currently provided on a semi-annual basis. The sections within this report are written in accordance with the Areas of Interest (AOIs) detailed in the above referenced report. Detailed information regarding O&M activity is included in the attached tables and figures for the Marcus Hook Industrial Complex as prepared by Stantec.

AOI 1 – 10 Plant
There are no active recovery systems in AOI 1. Monitoring wells in AOI 1 are gauged in the fourth quarter. Submittal of the AOI 1 Remedial Investigation Report (RIR) is due to PADEP and USEPA in December 2016 with a subsequent submittal of the Cleanup Plan in September 2017.

AOI 2 – 12 Plant
There are no active recovery systems in AOI 2. Monitoring wells in AOI 2 are gauged in the fourth quarter. Submittal of the AOI 2 RIR is due to PADEP and USEPA in December 2015 with a subsequent submittal of the Cleanup Plan in September 2016.

AOI 3 – Facility Office Buildings
Two remediation systems are located in AOI 3, the Laboratory Building Remediation System and the Green Street Recovery System.

Laboratory Building Remediation System
The recovery system consists of a combination of dual-phase recovery (separate pumps for groundwater and light non-aqueous phase liquids (LNAPL)) and product only recovery (LNAPL skimming pumps). The recovered water is pumped to the Marcus Hook Industrial Complex's separator. The recovered LNAPL is stored in a 5,000-gallon holding tank that is periodically pumped out and the contents recycled by the facility. The recovery systems RW-5, RW-134, and RW-135 were operational for the reporting period with the following exceptions:

- The system was shut down January 31 through Aril 2 due to a broken discharge line.
- RW-5 was not operational January 2, January 23, May 9, and May 15 for maintenance.
- RW-134 was not operational on January 18, May 9, May 15, June 20, and June 21 for pump repairs.
- RW-135 was not operational on January 2, April 5, April 17, May 15, May 29, June 3, and June 26 for maintenance.

A total of 2,316,704 gallons of groundwater and 1,119 gallons of LNAPL were recovered in this reporting period. Details of minor maintenance and performance data can be found in Attachment 1.

Green Street Recovery System
The recovery system at Green Street consists of an interceptor trench and pneumatic LNAPL skimmer pumps at six wells (S-1, S-2, S-4, SS-1A(new), P-2, and P-5) within the trench. Product thicknesses are checked weekly and pumps are turned on/off as needed based on recoverable product accumulations in each well. The recovered LNAPL is stored in a 1,100-gallon holding tank that is periodically pumped out and the contents recycled by the facility. The system was operational throughout the reporting period.

A total of 604 gallons of LNAPL was recovered by the system in the reporting period. System operation detail and performance data can be found in Attachment 1.

Submittal of the AOI 3 RIR is due to PADEP and USEPA in December 2014 with a subsequent submittal of the Cleanup Plan in September 2015.

AOI 4 – Upper No. 1 Tank Farm
Two remediation systems are located in AOI 4, the 12 Tank System and the H-5 System. One hydraulic control system is located in AOI 4, the AutoLab System.

The 12 Tank System
The 12 Tank System is located immediately inside the northern Hewes Avenue gate and is configured for total fluids extraction from eight recovery wells. The 12 Tank System was not operational during the reporting period. The discharge line for the system was damaged and plans are being made to combine the 12 Tank recovery system with the H-5 system. This work is being scheduled for the Third Quarter 2013.

The H-5 System
The H-5 System consists of a series of extraction points around the H-5 Control Room and a row

of extraction points along Post Road and west of Hewes Avenue in areas of known LNAPL presence. Currently, there are eight recovery wells pumping from around the H-5 Control Room and eight wells pumping along Post Road. The system was operational throughout this reporting period with the following exceptions:

- January 9: Pumps along Post Road were removed for winter maintenance.
- January 23 through April 25: The system was shut down due to freezing winter weather conditions.
- April 30: Installed new discharge lines for RW-152 and RW-155.
- May 8: The totalizer was found obstructed, was repaired and returned to service.
- May 30: The pump in RW-251 was removed and replaced on June 13.
- June 13: The air compressor breaker was tripped and reset.

A total of 84,174 gallons of groundwater was recovered in this reporting period. Details of minor maintenance and performance data can be found in Attachment 1.

The AutoLab System

In response to groundwater in the utility manholes along Post Road and surface ponding of water at the manhole adjacent to Braskem, pumps were installed in three proximal wells to attempt to depress the water table. On April 8, RW-159 was segregated from the H-5 discharge line along Post Road and total fluids pumps were installed in MW-168 and MW-169. A new discharge line was fabricated from the pumping wells directly to the benzene NESHAP controlled sewer for further processing. O&M of the AutoLab System is conducted weekly to ensure the pumps are operational.

Submittal of the AOI 4 RIR is due to PADEP and USEPA on December 2, 2013 with a subsequent submittal of the Cleanup Plan in September 2014.

AOI 5 – Lower No. 1 Tank Farm/15 & 17 Plants

The Middle Creek Hydraulic Control System is located in AOI 5. It consists of two interceptor trenches located between the API Separator and Middle Creek. The trenches are equipped with six inch diameter recovery wells and pneumatic submersible pumps. Total fluids are recovered from the trenches and transferred directly to the facility's separator system. The system was operational throughout the reporting period.

A total of 331,411 gallons of groundwater was recovered in this reporting period. No sheening was observed in Middle Creek during weekly low tide observations.

Submittal of the AOI 5 RIR is due to PADEP and USEPA in December 2017 with a subsequent submittal of the Cleanup Plan in September 2018.

AOI 6 – Lube Oil Center

There are three recovery systems in AOI 6: RW-8 (No. 2 Dock), RW-9 (Lube Oil Tank Field), and AOI 6 Bulkhead System.

RW-8, No. 2 Dock
The LNAPL recovery program at No. 2 Dock consists of one dual-phase recovery system in RW-8. Based on no significant LNAPL accumulation in RW-8, the system was taken offline in May 2009 to evaluate the need for ongoing recovery. RW-8 has remained off and is monitored on a monthly basis to track LNAPL accumulation and the potential need to re-start the recovery system.

RW-9, Lube Oil Tank Field
The system consists of one dual-phase recovery system located in RW-9. RW-9 is monitored monthly for LNAPL accumulation. Approximately 11 gallons of LNAPL was recovered by vacuum truck on February 20, 2013. There was no recoverable product in RW-9 the remainder of the reporting period.

Bulkhead System
The AOI 6 Bulkhead System consists of pneumatic total fluids pumps at four recovery wells (RW-12, RW-13, RW-14, and RW-15) adjacent to the bulkhead and adjacent to the abandoned sewer pipe. Total fluids are discharged to the facility's process sump (Sump W21-A) prior to transfer to the API Separator. This is the same sump that receives discharge of recovered fluids from the Phillips Island Recovery System. The sump is gauged on a weekly basis and LNAPL is removed via vacuum truck on an as needed basis or at a minimum of once per month.

A total of 1,002,240 gallons of total fluids was recovered for the reporting period. System operation detail and performance data can be found in Attachment 1.

Submittal of the AOI 6 RIR Addendum is due to PADEP and USEPA in May 2016 with a subsequent submittal of the Cleanup Plan in June 2017.

AOI 7 – Delaware Portion of the Facility
One remediation system is located in AOI 7, the Phillips Island Recovery System which is located along the Delaware River. The Phillips Island Recovery System is comprised of sheet pile walls and a network of recovery wells. The Phillips Island Recovery System is operated and controlled by remediation equipment in two remediation buildings: the Phillips Island Upper System and the Phillips Island Lower System. O&M activities are conducted weekly. Recovered groundwater and LNAPL are conveyed from the Upper System to the Lower System and all fluids are pumped to a facility process sump (Sump W21-A) for further treatment. The Phillips Island Recovery System discharges directly to the facility; there are no separators, totalizers, or holding tanks associated with this recovery system.

The Lower System consists of total fluids extraction from 14 recovery wells (W-1, W-2, MW-113, MW-114, MW-215, MW-218, MW-219, MW-221, MW-223, MW-224, MW-245, MW-259, MW-260, and MW-261) located along the Delaware River and five sumps (SUMP-1, SUMP-3, SUMP-5, SUMP-8, and a large sump referred to as the Big Sump) located along a sheet pile wall formerly referred to as the Weeping Wall. All of these pumping wells are driven by one 1½" Wilden double diaphragm pump mounted to a skid unit with 20 separate air actuated valves which permit each well to be optimized depending on its operating characteristics. Air is supplied to the system by a 10 horsepower (HP) Quincy air compressor located inside the Lower

System. All fluids are pumped to a facility process sump (Sump W21-A) for further treatment.

The Upper System currently consists of total fluids extraction from 19 recovery wells along the West Wall (PI-2 through PI-15, MW-116, MW-116A, MW-216, MW-256, and MW-258) utilizing a skid unit with a 1½" Wilden double diaphragm pump and 20 separate air actuated valves. The Upper System also includes the Delaware Seep wells. These 11 recovery wells were installed along the Delaware River in the State of Delaware (OW-2, OW-3, OW-4, OW-7, and OW-9 through OW-12) and in Pennsylvania (OW-13, OW-14, and OW-15). The Delaware Seep wells utilize CEE pneumatic submersible total fluids pumps. The total fluids discharge from the Upper System is pumped to the Lower System and then to the facility's Sump W21-A.

Starting in the second quarter of 2010, estimated LNAPL recovery totals are calculated with product thickness measurements from the 13.50' (long) by 4.50' (wide) W21-A sump. The Phillips Island Recovery System was operational throughout the reporting period with the following exceptions:

- January 23 through January 30: The Upper System was off due to freezing winter weather conditions.
- January 29 through January 30: The Lower System was off due to freezing winter weather conditions.
- February 4 through 6: The Upper System was off due to frozen air and water lines.
- February 13: The diaphragm was replaced on the Lower System Wilden pump.
- April 9: The Lower System air compressor was inoperable and repaired on April 11.

A total of 804 gallons of LNAPL and 7,439,336 gallons of groundwater were recovered by the system during this reporting period. The Phillips Island Recovery System operational status details for the reporting period are provided in Attachment 1.

Submittal of the AOI 7 RCRA Facility Investigation (RFI)/Corrective Measures Study (CMS) is due to USEPA in December 2018 and January 2019, respectively.

Former No. 2 Tank Farm

The former No. 2 Tank Farm (currently named the Marcus Hook Tank Farm and owned and operated by Sunoco Logistics Partners, LP) is located approximately two miles north of the Marcus Hook Industrial Complex (formerly the Marcus Hook Refinery) at the intersection of Market Street and Conchester Road. Although the former No. 2 Tank Farm is not part of the Marcus Hook Industrial Complex or the work being performed under the One Cleanup Program, the remediation status of the former No. 2 Tank Farm will continue to be detailed in this report. The former No. 2 Tank Farm has two operating total fluids recovery systems (groundwater and LNAPL): the Separator Area Recovery System and the L-1 Pump House Recovery System.

Separator Area Recovery System

The Separator Area Recovery System consists of total fluids recovery utilizing pneumatic submersible pumps in RW-1, RW-2, RW-3, RW-4, and RW-5. The total fluids are processed through an oil/water separator and the recovered water is pumped to the Marcus Hook Tank Farm's separator which is subsequently pumped to the Marcus Hook Industrial Complex. The recovered LNAPL gravity drains to a 550-gallon holding tank that is periodically pumped out

and the contents recycled by the Marcus Hook Industrial Complex.

The Separator System was operational for the reporting period with the following exceptions:

- January 1 through April 18: The system was off due to freezing winter weather conditions.
- April 23, April 30, May 6, and May 13: The system was down on high OWS alarm, maintained, and restarted.
- May 14, May 20, and May 28: The air compressor was down, repaired, and returned to service.

A total of 368,200 gallons of groundwater and 72 gallons of LNAPL were recovered by the Separator System during the reporting period. Performance data for the Separator Area Recovery System is presented in Attachment 1.

L-1 Pump House Recovery System
The L-1 Pump House Recovery System consists of total fluids recovery utilizing a pneumatic double diaphragm pump mounted to a skid unit capable of pumping from 19 wells for a programmed period of time. The total fluids are processed through an oil/water separator and the recovered water is pumped to a process line that discharges to 320 Tank and is subsequently transferred to the Marcus Hook Industrial Complex through the "5 Line". The recovered LNAPL gravity drains to a 550-gallon holding tank that is periodically pumped out and the contents recycled by the Marcus Hook Industrial Complex.

The L-1 Pump House system was operational for the reporting period with the following exceptions:

- January 1 through April 28: The system was shut down for the winter season.
- June 3: The system was down on high OWS alarm, maintained and restarted.

A total of 169,100 gallons of groundwater and 244 gallons of LNAPL were recovered by the L-1 Pump House system during the reporting period. Performance data for the Separator Area Recovery System is presented in Attachment 1.

A schedule of deliverables for the Site Wide Approach under the One Cleanup Program is included as Attachment 2.

Please direct any questions or comments to me at (610) 833-3444.

Sincerely,

James Oppenheim, PE
Sunoco, Inc. (R&M)

Enclosures (electronic):

Figure 1 – Site Location Map
Figure 2 – Site Plan
Attachment 1 – Remediation System Recovery Totals Data
Attachment 2 – Schedule for the Site Wide Approach under the One Cleanup Plan

cc: Mr. Eric Trinkle
Delaware DNREC
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89 Kings Highway
Dover, DE 19903

Kevin Bilash
US EPA Region III
Land & Chemicals Division 3LC30
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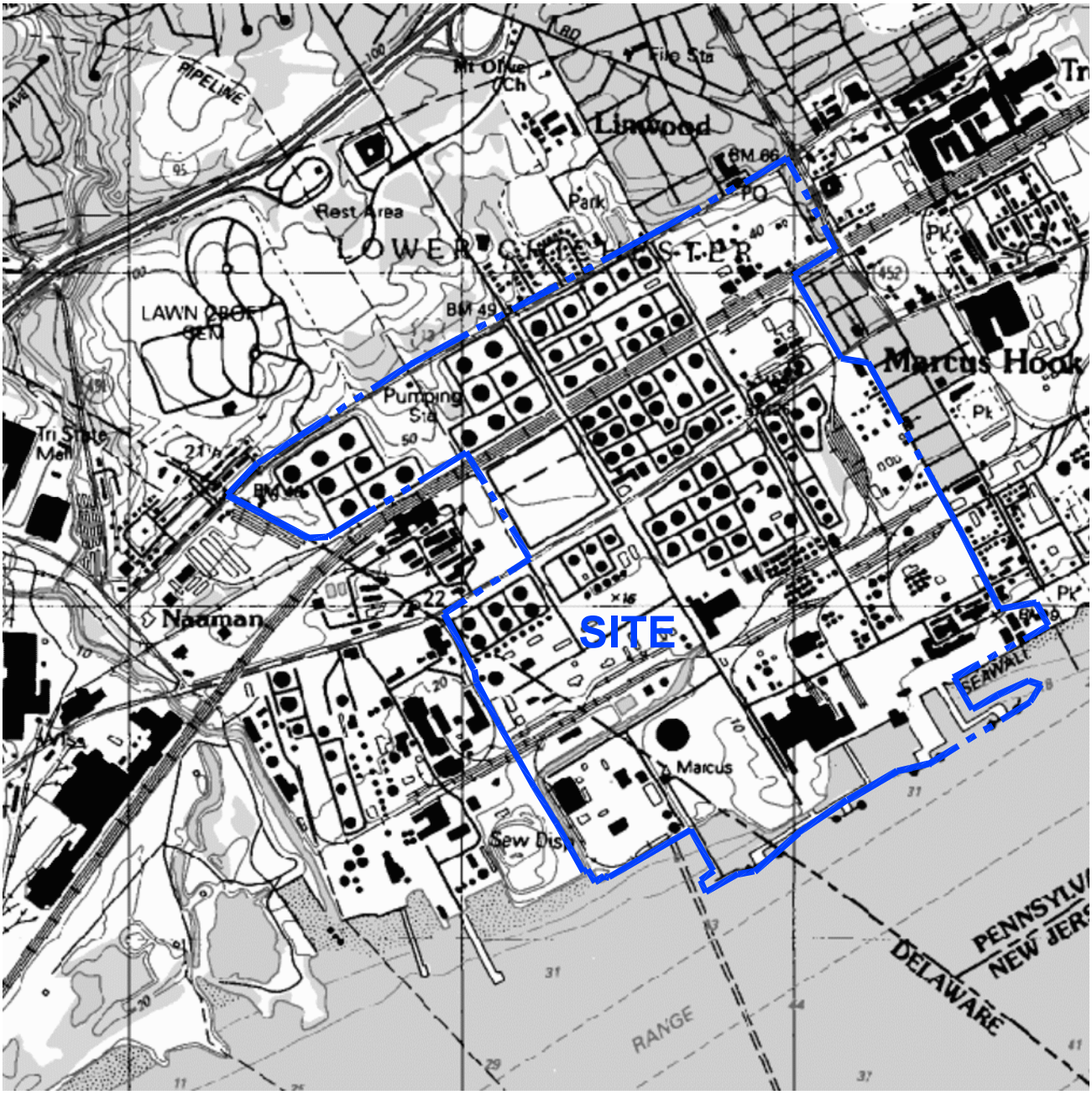
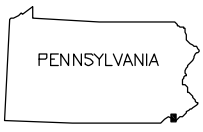
West Chester, PA 19380

File: Groundwater Remediation Status Report, Marcus Hook Industrial Complex, 1st Half 2013

FIGURES





QUADRANGLE LOCATION

N

0 1/4 1/2

MILES

REFERENCE: USGS 7.5 MINUTE QUADRANGLE; MARCUS HOOK, PA.–N.J.–DEL. QUADRANGLE, 1993

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FOR:
SUNOCO, INC. (R&M)
SUNOCO LOGISTICS PARTNERS, LP
MARCUS HOOK INDUSTRIAL COMPLEX
MARCUS HOOK, PENNSYLVANIA

SITE LOCATION MAP

MARCUS HOOK INDUSTRIAL COMPLEX

FIGURE: **1**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
	TFB	JLM	JLM	8/16/2013

- MONITORING WELL
- RECOVERY WELL
- SUMP AND RECOVERY SUMP WELL
- DAMAGED WELL
- DESTROYED WELL
- MONITORING AREA
- PROPERTY BOUNDARY (WHITE)
- AOI BOUNDARY (YELLOW)
- OR REMEDIATION SYSTEMS

N

0 110 220 440 660 880 Feet

PREPARED BY:

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FOR:

SUNOCO, INC. (R&M)
SUNOCO LOGISTICS PARTNERS L.P.
MARCUS HOOK INDUSTRIAL COMPLEX
MARCUS HOOK, PENNSYLVANIA

TITLE:

SITE PLAN

DRAWN BY: TFB	DESIGNED BY: JLM
CHECKED BY: JLM	APPROVED BY: JLM
PROJECT NUMBER:	SCALE: AS SHOWN
DATE: 6/26/2013	FILEPATH:

FIGURE:

2

Document Path: V:\2134\active\cadd files\1-Clients\Sunoco\Marcus Hook Refinery\2013\MARCUS_HOOK_SITEPLAN_2013.mxd

ATTACHMENT 1
REMEDIATION SYSTEM RECOVERY TOTALS DATA

Sunoco, Inc. Marcus Hook Industrial Complex
Remediation System Operational Data
AOI 3: Refinery Laboratory Building Remediation System

First and Second Quarters 2013

Date	RW-5		RW-134		RW-135		Total Period Ground Water Recovery (gal)	LNAPL Recovery	
	Total Flow (gal)	Average Flow Rate (gpm)	Total Flow (gal)	Average Flow Rate (gpm)	Total Flow (gal)	Average Flow Rate (gpm)		Period LNAPL Recovery (gallon)	Total LNAPL Recovery (gallon)
4-Jan-13	5,404,981	0.02	14,383,541	0.00	69,152,111	0.00	100	32.50	107,980.27
11-Jan-13	5,407,211	0.22	14,383,541	0.00	69,274,007	12.09	124,126	33.00	108,013.27
18-Jan-13	5,409,971	0.27	14,383,541	0.00	69,311,398	3.71	40,151	22.00	108,035.27
25-Jan-13	5,410,681	0.07	14,404,839	2.11	69,496,102	18.32	206,712	27.00	108,062.27
1-Feb-13	5,410,681	0.00	14,420,540	1.56	69,682,430	18.48	202,029	121.75	108,184.02
8-Feb-13	5,410,681	0.00	14,420,540	0.00	69,682,430	0.00	0	0.00	108,184.02
15-Feb-13	5,410,681	0.00	14,420,540	0.00	69,682,430	0.00	0	0.00	108,184.02
22-Feb-13	5,410,681	0.00	14,420,540	0.00	69,682,430	0.00	0	0.00	108,184.02
1-Mar-13	5,410,681	0.00	14,420,540	0.00	69,682,430	0.00	0	0.00	108,184.02
8-Mar-13	5,410,681	0.00	14,420,540	0.00	69,682,430	0.00	0	0.00	108,184.02
15-Mar-13	5,410,681	0.00	14,420,540	0.00	69,682,430	0.00	0	0.00	108,184.02
22-Mar-13	5,410,681	0.00	14,420,540	0.00	69,682,430	0.00	0	0.00	108,184.02
31-Mar-13	5,410,681	0.00	14,420,540	0.00	69,682,430	0.00	0	0.00	108,184.02
5-Apr-13	5,410,681	0.00	14,424,887	0.60	69,682,430	0.00	4,347	0.00	108,184.02
12-Apr-13	5,413,231	0.25	14,454,975	2.98	69,758,951	7.59	109,159	52.25	108,236.27
19-Apr-13	5,416,721	0.35	14,488,520	3.33	69,886,105	12.61	164,189	89.50	108,325.77
26-Apr-13	5,419,391	0.26	14,516,032	2.73	69,993,693	10.67	137,770	24.75	108,350.52
3-May-13	5,421,211	0.18	14,535,357	1.92	70,057,842	6.36	85,294	86.50	108,437.02
10-May-13	5,423,481	0.23	14,570,682	3.50	70,165,766	10.71	145,519	87.25	108,524.27
17-May-13	5,423,721	0.02	14,594,645	2.38	70,247,934	8.15	106,371	75.25	108,599.52
24-May-13	5,426,831	0.31	14,624,086	2.92	70,404,933	15.58	189,550	101.75	108,701.27
31-May-13	5,429,401	0.25	14,645,115	2.09	70,546,267	14.02	164,933	64.00	108,765.27
7-Jun-13	5,431,531	0.21	14,663,493	1.82	70,641,226	9.42	115,467	64.50	108,829.77
14-Jun-13	5,436,921	0.53	14,703,916	4.01	70,853,550	21.06	258,137	92.50	108,922.27
21-Jun-13	5,441,211	0.43	14,704,047	0.01	71,011,400	15.66	162,271	67.50	108,989.77
30-Jun-13	5,444,171	0.23	14,728,536	1.89	71,084,530	5.64	100,579	76.75	109,066.52

NOTES:

LNAPL: Light Non-Aqueous

gpm: gallons per minute

NA: Not Available

RW-5, RW-134, and RW-135 have product and groundwater pumps. RW-6 and RW-7 are product skimming only and operate intermittently when sufficient LNAPL quantities accumulate.

The system was operational for the reporting period with the following exceptions. The system was down on high tank alarm on January 14 and was off January 18 for system repairs. From January 31 through April 2 the system was turned off due to a broken Sunoco discharge line. On April 10, it was noticed that the RW-134 and RW-135 discharge line was also being used by another facility pump somewhere which caused the pumps to dead-head due to pressure on the line.

The RW-5 totalizer, which was not working on January 2, was cleaned and reinstalled. On January 23, the water pump effluent line was frozen. On May 9 and May 15, the water pump was not working; the sensors were removed, cleaned and reinstalled each day.

At RW-134, the water pump, hose and wiring were replaced on January 18. A small hole was found in the flow meter effluent elbow on April 17 which was temporarily repaired on April 18. The product pump was hung up upon arrival on April 30. The effluent elbow was replaced on May 9, and a new Warrick controller was installed May 15. The water pump was running continuously upon arrival on June 13. A short in the junction box was repaired and the system was restated on June 20. On June 21, the product pump sensors were removed, cleaned and reinstalled.

At RW-135, the totalizer face plate which was frozen and cracked was replaced with a spare meter on January 2. The flow meter batteries were dead and the totalizer was replaced with a newer model on April 5. On April 17 the product pump was cycling continuously; therefore, the pump was turned off pending installation of new Warrick controls. The product pump was turned on and off during weekly visits until the new Warrick control was installed on May 15. On May 29 the water pump was running continuously; it was pulled, cleaned, and reinstalled. The water pump was hung up and restarted on June 3. On June 26, the totalizer was not registering flow; the meter was removed, cleaned, and reinstalled.

Sunoco, Inc. Marcus Hook Industrial Complex
Remediation System Operational Data
AOI 3: Green Street Recovery System

First and Second Quarters 2013

Date	LNAPL Recovered	
	Period (gallons)	Total (gallons)
4-Jan-13	161.15	28,126.21
11-Jan-13	19.80	28,146.01
18-Jan-13	31.08	28,177.09
25-Jan-13	39.88	28,216.97
1-Feb-13	0.00	28,216.97
8-Feb-13	64.35	28,281.32
15-Feb-13	19.80	28,301.12
22-Feb-13	4.95	28,306.07
1-Mar-13	15.95	28,322.02
8-Mar-13	5.23	28,327.25
15-Mar-13	6.60	28,333.85
22-Mar-13	24.20	28,358.05
29-Mar-13	25.85	28,383.90
5-Apr-13	21.45	28,405.35
12-Apr-13	5.50	28,410.85
19-Apr-13	10.86	28,421.71
26-Apr-13	16.09	28,437.80
3-May-13	11.00	28,448.80
10-May-13	11.00	28,459.80
17-May-13	16.09	28,475.89
24-May-13	10.86	28,486.75
31-May-13	8.80	28,495.55
7-Jun-13	9.90	28,505.45
14-Jun-13	50.05	28,555.50
21-Jun-13	9.07	28,564.57
30-Jun-13	4.54	28,569.11

NOTES:

LNAPL: Light Non-Aqueous Phase Liquid

The Green Street Recovery System consists of six LNAPL only skimming pumps (S-1, S-2, S-4, SS-1A(new), P-2 and P-5). Product thicknesses are checked weekly and pumps are turned on/off as needed based on recoverable product thickness accumulations in each well. The system was operational for the reporting period with the following exceptions. On January 28, water in the holding tank was frozen; therefore, an accurate measurement could not be obtained. On March 5, the compressor was tripped and was reset. The pump in SS-1A(new) was turned off June 13. On June 28, the pump in P-5 was not removing product; the product line was repaired and the pump was reinstall. The pump in P-2 was turned off and the pump in SS-1A (new) was turned on.

Sunoco, Inc. Marcus Hook Industrial Complex
Recovery System Operational Data
AOI 4: Hewes Avenue and Post Road Remediation Systems
H-5 Area Remediation System

First and Second Quarters 2013

Date	Total Flow (gallons)	Period Total Flow (gallons)	Calculated System Flow Rate (gpm)	LNAPL Recovered in Period (gallons)	Total LNAPL Recovered (gallons)
4-Jan-13	5,046,431	7,455	1.29	NA	31,708.90
11-Jan-13	5,050,157	3,726	0.37	NA	31,708.90
18-Jan-13	5,061,036	10,879	1.08	NA	31,708.90
25-Jan-13	5,064,894	3,858	0.38	NA	31,708.90
1-Feb-13	5,064,894	0	0.00	NA	31,708.90
8-Feb-13	5,064,894	0	0.00	NA	31,708.90
15-Feb-13	5,064,894	0	0.00	NA	31,708.90
22-Feb-13	5,064,894	0	0.00	NA	31,708.90
1-Mar-13	5,064,894	0	0.00	NA	31,708.90
8-Mar-13	5,064,894	0	0.00	NA	31,708.90
15-Mar-13	5,064,894	0	0.00	NA	31,708.90
22-Mar-13	5,064,894	0	0.00	NA	31,708.90
31-Mar-13	5,064,894	0	0.00	NA	31,708.90
5-Apr-13	5,064,894	0	0.00	NA	31,708.90
12-Apr-13	5,064,894	0	0.00	NA	31,708.90
19-Apr-13	5,064,894	0	0.00	NA	31,708.90
26-Apr-13	5,065,108	214	0.02	NA	31,708.90
3-May-13	5,065,438	330	0.03	NA	31,708.90
10-May-13	5,065,888	450	0.04	NA	31,708.90
17-May-13	5,069,457	3,569	0.35	NA	31,708.90
24-May-13	5,072,464	3,007	0.30	NA	31,708.90
31-May-13	5,074,882	2,418	0.24	NA	31,708.90
7-Jun-13	5,079,813	4,931	0.49	NA	31,708.90
14-Jun-13	5,090,971	11,158	1.11	NA	31,708.90
21-Jun-13	5,108,731	17,760	1.76	NA	31,708.90
30-Jun-13	5,123,150	14,419	1.11	NA	31,708.90

NOTES:

LNAPL: Light Non-Aqueous Phase Liquid

gpm: gallons per minute

The Flow Rate is calculated based on the total water recovered in the period and the number of days in the period. A smaller diameter flow meter was installed on February 7, 2011; however, due to the intermittent cycling of the pumps, actual flow is greater than the volume recorded.

The system was operational throughout this reporting period with the following exceptions. On January 9, some of the pumps along Post Road were removed for winter maintenance cleaning. On January 23, the system was turned off due to freezing winter conditions. The system remained offline to perform winter maintenance including repair/replacement of the system discharge line. The totalizer was cleaned and all but two wells were restarted on April 25. New discharge lines for RW-152 and RW-155 were installed on April 30 and the entire system was operational. On May 8, the totalizer was not registering flow due to plastic found in the impeller. On May 23, RW-157 was hung up and freed. On May 30, RW-251 was hung up and removed pending replacement. RW-156 was hung up upon arrival on June 3. On June 13, the compressor was tripped and was restarted, and a new pump was installed in RW-251. On June 21, RW-157 was not pumping. It was removed, cleaned intake, and reinstalled.

On April 8, RW-159 was segregated from the main discharge line for Post Road and pumps were installed in MW-168 and MW-169. A new line was fabricated to the former AutoLab discharge piping.

Sunoco, Inc. Marcus Hook Industrial Complex
Remediation System Operational Data
AOI 5: Middle Creek Hydraulic Control System

First and Second Quarters 2013

Date	Days in Period	RW-A1	RW-B1	RW-B2	Total Period Ground Water Recovery (gal)	Comments
		Total Flow (gal)	Total Flow (gal)	Total Flow (gal)		
1/1/13 - 1/31/13	31	31	0	56,730	56,761	
2/1/13 - 2/28/13	28	28	0	51,240	51,268	
3/1/13 - 3/31/13	31	31	0	56,730	56,761	
4/1/13 - 4/30/13	30	30	0	54,900	54,930	
5/1/13 - 5/31/13	31	31	0	56,730	56,761	
6/1/13 - 6/30/13	30	30	0	54,900	54,930	

Semi-Annual Period Recovery **331,411**
Total Recovery to Date **1,699,982**

NOTES:

Two groundwater interceptor trenches were installed between the API separator and Middle Creek in December 2008. Pneumatic total fluids pumps were installed in three wells (RW-A1, RW-B1 and RW-B2) within the trenches. Total fluids are conveyed to the 15 Plant separator.

Recovery for the system (1,831 gallons per day) is estimated based on pumping tests conducted in June/July 2012 and calculated using system up time. The system was operational for the reporting period.

Sunoco, Inc. Marcus Hook Industrial Complex
AOI 6: Lube Oil Tank Field (RW-9)
Product Recovery Data

First and Second Quarters 2013

Date	DTP	DTW	LNAPL Thickness	Approx. LNAPL Volume (gal)	Incremental LNAPL Recovery (gal)	ESTIMATED Total LNAPL Recovered (gal)
1/4/2013	NM	NM	NM	0	0	68,395.25
1/11/2013	NM	NM	NM	0	0	68,395.25
1/18/2013	NM	NM	NM	0	0	68,395.25
1/25/2013	---	3.36	0.00	0	0	68,395.25
2/1/2013	NM	NM	NM	0	0	68,395.25
2/8/2013	NM	NM	NM	0	0	68,395.25
2/15/2013	NM	NM	NM	0	0	68,395.25
2/22/2013	3.54	3.59	0.05	10.98	10.98	68,406.23
3/1/2013	3.57	3.58	0.01	0	0	68,406.23
3/8/2013	3.55	3.55	<0.01	0	0	68,406.23
3/15/2013	3.39	3.39	<0.01	0	0	68,406.23
3/22/2013	3.39	3.39	<0.01	0	0	68,406.23
3/29/2013	NM	NM	NM	0	0	68,406.23
4/5/2013	NM	NM	NM	0	0	68,406.23
4/12/2013	8.20	8.21	0.01	0	0	68,406.23
4/19/2013	NM	NM	NM	0	0	68,406.23
4/26/2013	NM	NM	NM	0	0	68,406.23
5/3/2013	4.81	4.82	0.01	0	0	68,406.23
5/10/2013	NM	NM	NM	0	0	68,406.23
5/17/2013	3.52	3.53	0.01	0	0	68,406.23
5/24/2013	NM	NM	NM	0	0	68,406.23
5/31/2013	NM	NM	NM	0	0	68,406.23
6/7/2013	NM	NM	NM	0	0	68,406.23
6/14/2013	NM	NM	NM	0	0	68,406.23
6/21/2013	4.14	4.15	0.01	0	0	68,406.23
6/30/2013	3.43	3.44	0.01	0	0	68,406.23

NOTES:
DTP: Depth to Product
DTW: Depth to Water
LNAPL: Light Non-Aqueous Phase Liquid
NM: Not Measured
--- Indicates no LNAPL present in RW-9

Sunoco, Inc. Marcus Hook Industrial Complex
Remediation System Operational Data
AOI 6 Bulkhead System

First and Second Quarters 2013

Date	Days in Period	Days of Operation	Total Flow (gal)	Total Ground Water Recovery (gal)	Comments
01/04/2013	7	7	30,240	298,045	RW-13 awaiting diaphragms
01/11/2013	7	7	30,240	328,285	RW-13 awaiting diaphragms
01/18/2013	7	7	30,240	358,525	RW-13 awaiting diaphragms
01/25/2013	7	7	40,320	398,845	
02/01/2013	7	7	40,320	439,165	
02/08/2013	7	7	37,440	476,605	RW-12 & RW-15 were hung up 2/4
02/15/2013	7	7	36,000	512,605	
02/22/2013	7	7	38,880	551,485	RW-12 pump was hung up 2/19
03/01/2013	7	7	40,320	591,805	
03/08/2013	7	7	40,320	632,125	
03/15/2013	7	7	38,880	671,005	RW-12 pump was hung up 2/19
03/22/2013	7	7	40,320	711,325	
03/29/2013	7	7	40,320	751,645	
04/05/2013	7	7	40,320	791,965	
04/12/2013	7	7	40,320	832,285	
04/19/2013	7	7	40,320	872,605	
04/26/2013	7	7	40,320	912,925	
05/03/2013	7	7	40,320	953,245	
05/10/2013	7	7	40,320	993,565	
05/17/2013	7	7	38,880	1,032,445	RW-15 pump was hung up 5/14
05/24/2013	7	7	40,320	1,072,765	
05/31/2013	7	7	38,880	1,111,645	RW-14 pump was hung up 5/28
06/07/2013	7	7	40,320	1,151,965	
06/14/2013	7	7	38,880	1,190,845	RW-15 pump was hung up 6/10
06/21/2013	7	7	40,320	1,231,165	
06/30/2013	7	7	38,880	1,270,045	RW-15 pump was hung up 6/24

Period Recovery **1,002,240**

NOTES:

The AOI 6 Bulkhead System was started on November 5, 2012. Pneumatic total fluids pumps are installed in 4 recovery wells (RW-12, RW-13, RW-14 and RW-15). The system discharges directly to the refinery's W21-A sump and estimated LNAPL recovery totals are reported jointly with the Phillip's Island system product totals. Groundwater recovery totals are calculated from system up-time based on 1 gallon per minute per recovery well (4 gallons per minute total).

Sunoco, Inc. Marcus Hook Industrial Complex
Remediation System Operational Data
AOI 7: Phillips Island Remediation System

First and Second Quarters 2013

Date	Upper Phillips Island System (days of operation)	Upper Phillips Island System (gallons)	Lower Phillips Island System (days of operation)	Lower Phillips Island System (gallons)	Delaware Seep (days of operation)	Delaware Seep (gallons)	Period Groundwater Recovery Volume (gal)	Period LNAPL Recovery Volume (gal)	Total LNAPL Recovery Volume (gal)
1/4/2013	4	368	4	512	4	176,244	177,124	---	21,772
1/11/2013	7	644	7	896	7	308,427	309,967	---	21,772
1/18/2013	7	644	7	896	7	308,427	309,967	140.89	21,913
1/25/2013	4	368	7	896	4	176,244	177,508	---	21,913
2/1/2013	2	184	2	256	2	88,122	88,562	54.54	21,967
2/8/2013	4	368	7	896	4	176,244	177,508	---	21,967
2/15/2013	7	644	6	768	7	308,427	309,839	45.45	22,013
2/22/2013	7	644	7	896	7	308,427	309,967	---	22,013
3/1/2013	7	644	7	896	7	308,427	309,967	40.90	22,054
3/8/2013	7	644	7	896	7	308,427	309,967	---	22,054
3/15/2013	7	644	7	896	7	308,427	309,967	---	22,054
3/22/2013	7	644	7	896	7	308,427	309,967	---	22,054
3/29/2013	7	644	7	896	7	308,427	309,967	72.72	22,127
4/5/2013	7	644	7	896	7	308,427	309,967	---	22,127
4/12/2013	7	644	4	512	7	308,427	309,583	---	22,127
4/19/2013	7	644	7	896	7	308,427	309,967	---	22,127
4/26/2013	7	644	7	896	7	308,427	309,967	145.43	22,272
5/3/2013	7	644	7	896	7	308,427	309,967	---	22,272
5/10/2013	7	644	7	896	7	308,427	309,967	---	22,272
5/17/2013	7	644	7	896	7	308,427	309,967	---	22,272
5/24/2013	7	644	6	768	7	308,427	309,839	109.07	22,381
5/31/2013	7	644	7	896	7	308,427	309,967	---	22,381
6/7/2013	7	644	7	896	7	308,427	309,967	---	22,381
6/14/2013	7	644	7	896	7	308,427	309,967	---	22,381
6/21/2013	7	644	7	896	7	308,427	309,967	---	22,381
6/30/2013	7	644	7	896	7	308,427	309,967	195.42	22,576

NOTES:
NA = Not Applicable
NM = Not Measured

The Phillips Island Recovery System is comprised of sheet pile walls and a network of recovery wells. The Phillips Island Recovery System is operated and controlled by remediation equipment in two remediation buildings: the Phillips Island Upper System (Delaware Seep and West Wall Recovery) and the Phillips Island Lower System. The Phillips Island Recovery System discharges directly to the refinery; there are no separators, totalizers, or holding tanks associated with this recovery system. Estimated LNAPL recovery totals are calculated with product thickness measurements from the refinery's Sump W21-A (13.50' [length] by 4.50' [width]).

The systems were operational for the reporting period with the following exceptions. On January 23, the Upper System was found off due to freezing conditions and the Lower System was frozen on January 29. All systems were restarted on January 30. From February 4 through February 6 the Upper System was off due to frozen air and water lines. On February 13, a diaphragm was replaced on the Wilden pump in the Lower System. On April 9, the Lower System air compressor was not running because one leg was missing power at the electrical substation. The Sunoco electrician made the repair and the Lower System was put back in service on April 11.

Sunoco Marcus Hook Tank Farm (former No. 2 Tank Farm)
Remediation System Operational Data
Separator Area Recovery System

First and Second Quarters 2013

Date	Ground Water Recovered in Period (gallons)	Total Ground Water Recovered (gallons)	Average Flow Rate (gpm)	LNAPL Recovered in Period (gallons)	Total LNAPL Recovered (gallons)
4-Jan-13	3,670	10,217,881	0.64	3.50	9,975.25
19-Apr-13	490	10,218,371	0.00	0.00	9,975.25
26-Apr-13	3,390	10,221,761	0.34	0.00	9,975.25
3-May-13	4,700	10,226,461	0.47	0.00	9,975.25
10-May-13	7,710	10,234,171	0.76	0.00	9,975.25
17-May-13	2,500	10,236,671	0.25	0.00	9,975.25
24-May-13	46,050	10,282,721	4.57	0.00	9,975.25
31-May-13	72,930	10,355,651	7.24	3.00	9,978.25
7-Jun-13	52,080	10,407,731	5.17	9.00	9,987.25
14-Jun-13	63,920	10,471,651	6.34	31.00	10,018.25
21-Jun-13	67,140	10,538,791	6.66	9.50	10,027.75
30-Jun-13	43,620	10,582,411	3.37	16.25	10,044.00

NOTES:

gpm: gallons per minute

LNAPL: Light Non-Aqueous Phase Liquid

The Average Flow Rate is calculated based on the total water recovered in the period and the number of days in the period.

The Separator System was turned off January 1, 2013 due to freezing winter weather conditions. The system was restarted on April 18, 2013. On April 23, the system was not operational on arrival due to high oil/water separator alarm. The flow meter was removed and cleaned and the system was restarted. On April 26, new pipe and hose was installed from the oil/water separator to the transfer pump. On April 30, the system was not operational on arrival due to high oil/water separator alarm; RW-5 was left off and the system was restarted. On May 6, the system was not operational due to high oil/water separator alarm; a new transfer pump and relief valve were installed and the system was restarted. On May 13, the system was not operational due to high oil/water separator alarm due to a short in the float switch which was replaced. On May 14, the system was not operational due to a broken flywheel and key on the compressor which were replaced the same day. On May 20 and May 28, the system was not operational due to a broken belt on the air compressor which was replaced and restarted. The system was operational for the remainder of the reporting period.

Sunoco Marcus Hook Tank Farm (former No. 2 Tank Farm)
Remediation System Operational Data
L-1 Pump House Recovery System

First and Second Quarters 2013

Date	Ground Water Recovered in Period (gallons)	Total Ground Water Recovered (gallons)	LNAPL Recovered in Period (gallons)	Total LNAPL Recovered (gallons)
19-Apr-13	0	2,249,770	0.00	24,046.75
26-Apr-13	8,410	2,258,180	25.50	24,072.25
3-May-13	15,020	2,273,200	19.75	24,092.00
10-May-13	16,180	2,289,380	26.75	24,118.75
17-May-13	20,200	2,309,580	28.00	24,146.75
24-May-13	15,300	2,324,880	25.25	24,172.00
31-May-13	33,990	2,358,870	40.25	24,212.25
7-Jun-13	1,290	2,360,160	3.75	24,216.00
14-Jun-13	23,420	2,383,580	33.75	24,249.75
21-Jun-13	23,100	2,406,680	7.50	24,257.25
30-Jun-13	12,190	2,418,870	33.75	24,291.00

NOTES:

LNAPL: Light Non-Aqueous Phase Liquid.

The L-1 Pump House System was shut-down for the winter season on November 26, 2012. The system was restarted on April 18, 2013 and was operational for the reporting period with the following exception. On June 3, the system was not operational on arrival due to high oil/water separator alarm. The flow meter was removed, the screen on the influent side of the meter was cleaned, the float switches were cleaned, and the system was restarted.

ATTACHMENT 2
SCHEDULE FOR THE SITE WIDE APPROACH UNDER THE ONE CLEANUP PLAN

Attachment 2

Schedule for the Site Wide Approach under the One Cleanup Plan

Sunoco Marcus Hook Industrial Complex

As of 8/15/2013

AOI	Date	Deliverable
All AOIs	1/30/2012	**CCR (Submitted)**
AOI 6	10/1/2012	**Act 2 RIR (Submitted)**
AOI 4	12/2/2013	**Act 2 RIR**
	9/1/2014	**Clean Up Plan**
AOI 3	12/13/2014	**Act 2 RIR**
	9/1/2015	**Clean Up Plan**
AOI 2	12/1/2015	**Act 2 RIR**
	9/1/2016	**Clean Up Plan**
AOI 6	5/1/2016	**RIR Addendum**
AOI 1	12/1/2016	**Act 2 RIR**
AOI 6	6/1/2017	**Clean Up Plan**
AOI 1	9/1/2017	**Clean Up Plan**
AOI 5	12/1/2017	**Act 2 RIR**
	9/1/2018	**Clean Up Plan**
AOI 7	12/1/2018	**RFI**
	1/1/2019	**CMS**